The Cornell Countryman

VOL. 4. APRIL, 1907 NO. 7

THE AIR WE BREATHE

By Wilford M. Wilson

Director N. Y. Section, U. S. Weather Bureau

FOR nearly eight months in the year the householder in this climate is confronted with the problem of heat, ventilation, catarrh and coal bills. The other four months he tries to live out of doors in the open air to store up sufficient vitality to carry him through the winter. The condition of the air we breathe within our dwellings and offices during the long period requiring artificial heating is, therefore, worthy of attention.

It is conceded that the free, natural, out-door air is best fitted for the highest physical development in the healthy and in many instances a positive cure for the troubles of the ailing. Sanatoriums are established where the only medicine employed is the tonic of exercise and pure air. Many persons suffering from troubles associated with the air passages live in tents in their own back yards and are cured. Nature's atmosphere may, therefore, be regarded as the true tonic and the nearer the condition of the air within our artificially heated dwellings, offices, and schoolrooms approach that of the free out-door atmosphere the more health and comfort will be experienced.

Natural dry air is composed of 21 parts by volume of oxygen, 78 parts of nitrogen with one part of argon, helium and xenon and a trace of carbonic acid. These gases are not chemically combined but form a nearly perfect mixture. Although nitrogen is heavier than oxygen and argon is heavier than either nitrogen or oxygen the law of diffusion of gases operates to maintain so nearly perfect a mixture that samples of air collected from all quarters of the globe from sea level to the highest elevations reached by means of mountains or balloons show essentially the same relative proportions of these various gases. Ammonia, nitrous acid and ozone, dust from the land, salt from the sea, the pollen and spores of plants and innumerable micro-organisms are occasionally met with but the presence of these incidental substances in no way effects the proportion of the chief gaseous elements. Each gas has its own particular office. The nitrogen gives the atmosphere weight and density; carbonic acid gas supports plant life, and oxygen aids combustion. The chemical union of the oxygen of the air drawn in through the lungs with the carbon of the tissues burns up the bodily waste, keeps the body warm and sustains life. The object of all systems of ventilation is, therefore, to carry off the gases resulting from this process of combustion and to supply air having the full proportion of oxygen. In addition to the principal gases named, which maintain such a remarkably uniform proportion under the most widely varying conditions of temperature and pressure, there is always present in the free air a variable quantity of aqueous vapor or moisture. Dry air is not found in nature nor is it fit to breathe until it has been toned down and softened by the addition of aqueous vapor. Neither plants nor animals will long survive in an atmosphere devoid of moisture and since moisture is an essential part of the natural out-door atmosphere it becomes the question to determine how far the natural proportion of moisture

is disturbed by heating the air to the point of comfort. Before taking up the discussion of the effect of artificial heating in its relation to humidity it seems necessary to define as clearly as may be some of the terms to be employed.

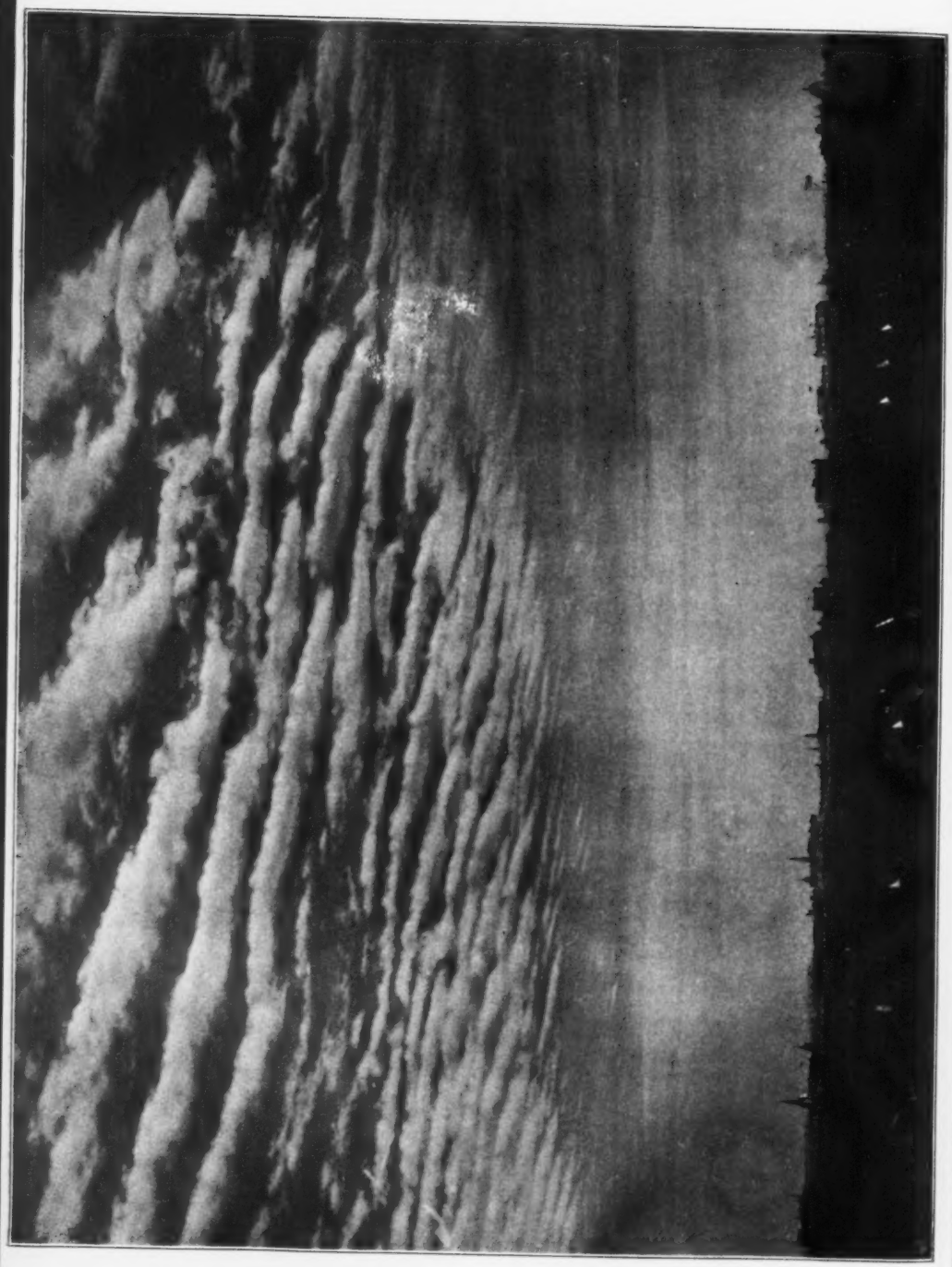
The moisture or aqueous vapor in the atmosphere is called its humidity. For further distinction the terms relative and absolute humidity are employed. Absolute humidity is the actual amount of water present in the atmosphere and is usually measured in grains; it may be measured in pints or quarts. An illustration may be of assistance. Take a room 10 feet square and 10 feet high, containing 1000 cubic feet of perfectly dry air at a temperature of 70°. Introduce one half pint of water, by pouring it over a cloth hung in the room. When the cloth is dry it is certain that the half pint of water has passed into the air and this half pint of water now in the form of an invisible vapor in the air is

called its absolute humidity. It does not matter how much or how little actual water may be present in the air, a grain or a gallon, whatever the amount may be is its absolute humidity. If a little more than another pint, to be exact, 7980 grains in all, be poured over the cloth it will all pass into the space in the room as before, but this is the limit of the 1000 cubic feet of space at a temperature of 70° to absorb moisture and the air is said to be "saturated". Although sanctioned by common usage it is not strictly correct to say that "the air is saturated" for it is a curious fact that exactly the same amount of water will pass into the given space if the air be not present and the room a vacuum, the only difference being that the process of diffusion proceeds a little more rapidly when the air is not present. The absorbing capacity of air, if we may retain that expression, varies with the temperature. At zero 1000 cubic feet of air will absorb only 40 grains of water while at 70° the capacity increases to 7980 grains—a little more than one pint.

Relative humidity is expressed in percentage. zero indicating absolute dryness and 100 saturation. If a hygrometer, an instrument for measuring the relative humidity of the air, be placed in the room at the beginning of the experiment the needle or pointer will point to zero on the scale indicating that the air is perfectly dry. As the first half pint of water is being absorbed the hand will move slowly toward the center of the scale until near the 50 mark, showing that the space is about half filled. The relative humidity is therefore 50%. When the second half pint is absorbed the needle will rest at 100, indicating that the capacity of the space at the given temperature has been satisfied. The relative humidity is, therefore, 100% and the air in a condition of saturation. If the temperature of the air in the room be lowered from 70° to 20°, 6880 grains—nearly a pint of water—will be condensed—that is squeezed out of the air because air at a temperature of 20° can retain only .11 grains per cubic foot. If the action of the

hygrometer be noted during the process of cooling it will be seen that the pointer has remained stationary at 100%, showing that although nearly a pint of water has been squeezed out of the air no effect has been produced on the relative humidity. We now have a volume of saturated air at a temperature of 20°, which, for the purpose of comparison, may be fairly taken to represent the average condition of the outside atmosphere during the period requiring artificial heating. The temperature of this volume of air will be raised to the point of comfort, 70°, and the effect on the relative humidity noted. As the temperature rises the pointer of the hygrometer will move slowly from the 100 mark toward the zero of the scale, passing, 75, 50, 40, 30, finally resting at about 25%. There is exactly the same amount of water in the air as when the needle pointed to 100 but the heat has so increased the capacity of the air for moisture that there is only about one fourth enough to satisfy it. The relative humidity of air has, therefore, been reduced from 100%, saturation, to 25% by simply raising the temperature to the point of comfort. This is what results when out-door air is heated to 70° with no provision for supplying additional moisture, except that the out-door air is not always at the point of saturation and therefore the final result is an atmosphere in which the relative humidity is even less than 25%. Observations made in many buildings heated by hot air, hot water and steam show that there is little difference what system of heating is used the effect on the relative humidity is practically the same. The relative humidity of nature's air, except in a few localities where peculiar climatic conditions exist, is about 75% but when artifically heated and thus robbed of over 60% of its natural moisture becomes drier than the driest climate known.

The evaporative power of air with a relative humidity of 25% is very great. It will seek out and absorb every particle of moisture it can reach. Furniture will dry up and fall apart; books loosen in their bindings; seams open in the woodwork and unsightly cracks appear. Such an atmosphere is unnatural and unfit to breathe and tends to induce a condition of the respiratory tract that sooner or later



invites disease. When the mucous membranes of the throat and lungs are subjected to this drying process the glands which supply the membranes with moisture to keep them in proper physiological condition are irritated and stimulated to do increased work. An increase of work results in an increase of size and functional activity and thus tends to develop an abnormal condition which finally prepares the surface for the reception of the germs of disease. By far the greater proportion of catarrhal troubles in this climate are traceable directly to the lack of sufficient moisture in living rooms to bring the humidity to something near the natural condition of the out side air. Dr. Baxter, in his work on Weather Influences, shows very clearly that dry air in school rooms causes irritability, restlessness and a condition of nervous tension both in teachers and pupils, the humidity and deportment curves being so uniform as to leave little room for doubt that the relation is other than that of cause and effect. That annoying cough that so often attacks children after coming in from play in the open air is due to the irritation caused by dry air and will continue until the glands of the throat respond to the call for a larger supply of moisture.

On the other hand the evaporation of a tea-kettle of water will be more effective than cough mixtures in bringing rest and quiet to a house disturbed by that irritating, brassy, winter-night cough of children. It is not impossible that the excellent results that have attended the out-door treatment of pneumonia and kindred diseases are largely due to the natural condition of the atmosphere with respect to moisture thus obtained.

The economic advantage of atmospheric moisture as a coal saver is equally interesting. A moment's thought will recall the fact that we frequently sit out of doors in June with perfect comfort when the temperature is little above 60°. Such a temperature in-doors in winter would be decidedly uncomfortable. Have we any good reason for being comfortable at one time and chilly at another? The temperature in both cases is the same but the out-door air in June is moist while the in-door air in winter is dry. Dry air makes us cold. Our bodies being warmer than the surrounding air radiate heat into it. Moist air absorbs radiated heat and is warmed by it but heat goes right through dry air without warming it very much; so we lose more heat in a dry atmosphere than in a moist atmosphere.

Again, evaporation is constantly going on from the surface of our bodies. Evaporation requires heat and the heat in this case is drawn from the body. Evaporation proceeds more rapidly in dry air than in moist air and, so, more heat is taken from the body in the presence of a dry atmosphere than when the air contains a greater percentage of moisture. Prof. Johnson says: "Were it not for the moisture in the air it would be too cold to live in. Humidity in the air is Nature's great bed-blanket for all her children without which they would all perish. So, likewise, moisture in living rooms acts as clothing and helps to keep us warm."

Living rooms heated to 65° and supplied with 50% of moisture are more comfortable and more healthful than when heated to 70° or 72° with 25% of humidity. The fuel required to raise the temperature from 65° to 70° might, therefore, better be saved.

It has been claimed that there will be little or no saving of fuel by heating to 65° and supplying moisture because the heat used to evaporate water to supply the necessary moisture might otherwise be utilized to raise the temperature. It is true that heat is required to evaporate water but the heat so used is not lost. It is stored up in the vapor, rendered "latent," and passes into the room with the vapor; and when the vapor is condensed on the cool surfaces the heat is set free or "liberated" which means that it again possesses the same power to raise the temperature as when it came direct from the furnace or the radiator. There can, therefore, be no loss of heat by using it to evaporate

water to moisten the air in living rooms.

Unfortunately even in modern systems of heating, little attention is given to the need for moisture and the householder is left to supply the deficiency as best he may. Most hot air furnaces are equipped with water pans which if located where there is sufficient heat to evaporate a considerable quantity of water, say 6 to 8 quarts for a 10 room house in 24 hours, a fairly moist atmosphere will be obtained. In hot water and steam heating a water tank attached to the radiators will afford considerable relief but will hardly take the place of a well filled tea-kettle on a kitchen range.

TEXT BOOKS WANTED

By F. O. Waugh

Professor of Horticulture and Landscape Gardening, Massachusetts Agricultural College

WE have been making great progress in the past ten years in our methods of teaching agriculture. I here use the term agriculture in its broadest sense to cover all the various branches of agronomy, horticulture, animal husbandry, rural engineering, rural economics, etc., which can be legitimately brought into the curriculum of a college course. The first great improvement—as we all know—was, in fact, the disengagement of these various subjects from one another and their vital emergence out of that incoherent mass of jumbled science, empiricism and guess work which fifteen years ago formed the courses in agriculture even in our best colleges.

The second great improvement came in the selection of materials for teaching. At the beginning—that is, a dozen years ago—some teachers held that the courses should be scientific. Others insisted that they must be "practical." Evolution has naturally and fortunately brought us to neither ideal. If we may characterize, though somewhat roughly, our best schemes of modern teaching in agriculture, we may say that they are dominated by technique. The best courses in dairy husbandry lay chief emphasis on the technique of milk production and on the handling, manufacture and disposal of dairy products. The best courses in crop production deal chiefly with the technique of growing corn, cotton or onions.

The third advance came, or is coming, in the methods of presenting these materials to classes. We have been fond of saying of late that agriculture is assuming pedagogic form. We must not make ourselves believe, however, that this part of our progress is completed. Agriculture is a long way behind geometry yet in this respect.

We are now about ready to enter upon a fourth stage of improvement. This is the era of text books. For while a great part of agricultural teaching will always be done by other means the text book must be more generally used than it now is, or we shall always seriously lack in economy of the pupil's time. A given subject clearly, concisely, cogently presented in a clean, well-made book can be covered by the ordinary class in half the time required to cover the same ground in lectures. This is especially true in elementary courses and with freshmen and sophomores,—and this is precisely the field where our present teaching is weakest. The rule should always be lectures for the advanced classes, text books for beginners. And I am persuaded that the time has nearly arrived when these text books can be made.

Up to the present time every hopeful author of an agricultural book has felt compelled to appeal to a larger audience than his classroom would furnish. The man who writes a book on stock breeding tries to make it hit the stock breeder; and if all the while he keeps his other eye on the college student he is apt to miss both targets. General fruit growing is a subject belonging properly to the sophomore or

junior year of the college course; and most certainly the text book should be made the basis of the work with any such class. But the various books on that subject now in print suffer from this bifocal aim, if indeed they do not ignore the college student altogether. It is now only a question of whether there are college students enough to justify the right man in making a book exactly to meet the needs of the classroom.

Some slight efforts are now being made in the writing of text books on agricultural subjects; but, for the most part, the books now making seem to be directed at the common schools, the high schools, or the popular reading courses. Although I know of a number of books now hatching in various incubators, I do not know of a single one which is planned to meet the needs of college men.

When these books finally begin to issue we may expect of course that some mistakes will be made. Some which are born with high hopes and coddled by the best nurses will die unmourned at teething time. But surely with all the examples which we have in the text books of the older sciences and technical subjects such disasters ought to be few. I think I could write a good text book myself if I had time. Possibly Prof. Bailey could make another.

THE MEETING OF THE NEW YORK EXPERIMENTERS' LEAGUE

Reported by H. H. Schutz, '07, and M. C. Burritt, '08

THE fourth annual meeting of the New York Experimenters' League was held at Cornell, on February 21 and 22, and was by far the best attended and most successful meeting so far. The League originated here on March 3, 1903. Its purpose is that of carrying on co-operative farm experiments; promoting intercourse among those studying farm problems; collecting and disseminating data relating to country life; and supporting legislation favorable to the promotion of these objects.

The first session was called by President Winters at 2:10 o'clock. Dean Bailey was at once introduced and welcomed the League, not only to Ithaca and Cornell but to the new buildings as well, this session being held in the Dairy lecture room of the new College. Dean Bailey said that we stood apart from the University and yet were very closely connected with it. He outlined the plan for planting the grounds, and described the forcing houses, barns and other buildings to be added in the near future.

"We have many old organizations and associations in the state," the Dean said, "but the League represents well our experimental and agricultural interests, and is bound to grow and succeed. I wonder how soon it will develop into a series of departments; stock breeding, horticulture, rural schools, etc. It will soon outgrow its name but we trust it will join others in promoting agricultural interests throughout New York."

In the response, Mr. G. A. Prole, of Batavia, was brief but to the point. He said that those who went back to the farm from Cornell were more given to *work* than *talk*. "Actions speak louder than words," he said, "and we propose to show you this in our work for the League." Mr. Prole declared that contrary to his previous opinion, he believed the best things were to be found in agriculture, and meant that the League members should help others to these best things.

Prof. Stewart presented a most remarkable series of papers on potato growing. He stated that there were 400,000 acres of potatoes in New York state and that the average yield was less than 100 bu. per acre, while many men are getting 200 and 300 and even as high as 400 bu. per acre.

He thought that a principal reason for the low average was lack of thorough spraying; and outlined the experiments of the Geneva station, intended to demonstrate the value and cost of spraying. Prof. Stewart was followed by three men—all ex-Cornell Winter Course—who gave their experience in growing potatoes: Mr. C. T. Osborne, of East Hampton, L. I., Mr. J. A. Miller, of Dansville and Mr. J. A. Prole, of Batavia. All showed a thorough understanding of their subject and a careful attention to detail, giving accurate reports of their work. All believed that thorough spraying was profitable and gave figures to substantiate their belief.

The next paper, written by T. E. Martin, of West Rush, was perhaps the most interesting and delightful of the session. It was read by Prof. Briggs, Mr. Martin not being able to read. In ten years Mr. Martin has raised a $4,500 mortgage on a 57 acre farm, besides laying nine miles of under drains at a cost of $2,000. This has been done largely from the proceeds of potato growing. Last year Mr. Martin raised 7,500 bu. from 18 acres or 417 bu. per acre. He has accomplished this by hard and intelligent work and looks forward to 500 bu. per acre in the future. The paper was rich in pithy sayings, the practicing of which is no doubt the secret of Mr. Martin's success.

The subject was then changed to Horticulture and Mr. W. T. Mann, of Barber, gave his experience in apple growing. He has been trying to demonstrate that an apple orchard can be made profitable at a much younger age than is usually the case. In 1905 Mr. Mann realized a profit of nearly $75 per acre from eight year old trees. He believes in thorough culture and feeding, low heading and little pruning.

Mr. F. A. Salisbury, of Phelps, spoke on "Fruit Experiences." He remarked that there was a fascination in fruit growing which made it very pleasant work. He thought that it was the most profitable of any of the branches of Agriculture. He briefly outlined his method of rejuvenating neglected orchards.

The next speaker was D. R. Pease, of Trumansburg, who told of his very successful methods of growing cherries. He laid stress on the selection of the orchard site and stock, declaring that none could be too good. Much care is used to shape the tree properly at the start and little pruning done afterward. Intensive culture of young trees for the entire growing season is the rule. Mr. Pease sprays almost constantly and gets fine fruit for which he received last year 16 cents per quart.

Prof. Judson then outlined the Field Experiments in Horticulture for 1907, and the first session adjourned.

The second session of the League meeting was held in Sibley Dome. M. M. Underdown, '01, of Sangerfield, was the first on the program, and held the closest attention of the audience while he spoke on the work that he is doing. It was the object of Mr. Sangerfield to make his farms models for those in the same region, so he put them under the direction of the College of Agriculture, and Mr. Underdown was sent there as manager. The first change instituted was that from a one-crop system—growing hops—to a system more diversified. Dairying and the growing of potatoes and hay were added with marked success and influence on the neighborhood. Mr. Underdown laid particular emphasis upon keeping systematic accounts, and upon the fact that in order to be successful as an object lesson a farm must be run upon a paying basis. In Mr. Underdown it was again noticeable what uniform success attends the efforts of Cornell graduates and League workers.

Mr. L. F. Boyle, of Ithaca, set forth the results of his labors on the Valley View Farm. His paper was representative of so much originality and earnest endeavor that it was awarded the second Ammerman prize. He advocated sprinkling eggs during artificial incubation, and gave the results of sprinkling them on the seventh or fourteenth days. These seem to indicate that the percentage of chicks is largely increased by removing the tray from the incubabor and calmly

sprinkling the eggs on the seventh day. He ended by flashing a picture of Prof. Rice on the screen and giving him credit for the inspiration that had carried him through his work.

Miss Nixon, of Trumansburg, a student in agriculture, told of the new breed of hens that had so suddenly appeared on the poultry grounds last year. They were merely white Leghorns that had been dyed to aid in studying the process of molting. It was shown that by starving the hen the molt is forced, whereas feeding them all they would eat retards it and also increases the rate of mortality.

The talk of G. W. Conover, Sp. Ag., on the Laying Houses, was practically a resumé of Reading Course Bulletin No. 33, just issued by Prof. Rice and R. C. Lawry. The house he described is one that is well suited to northern conditions, and on account of its simplicity and studied interior arrangement, one worth attention by those at all interested in poultry.

Dr. Santee, of the U. S. D. Agr., spoke briefly upon the advantages of muslin curtains as ventilating and drying devices. They do not keep a barn quite as warm as does the King System, nevertheless the barns remain comfortable, fresh and dry. He recommends the use of 2 sq. ft. of muslin per every 1000 lbs. of cow in the barn.

"Distribution of Plant Diseases by Seeds," was the subject chosen by Mr. H. S. Jackson, of the Newark, Del., Experiment Station. By means of numerous slides he illustrated the ravages of anthracnose, blight and rot, and recommended means for insuring against attack and prevention of spread. For combatting anthracnose of the bean (1) plant clean selected seed; (2) use uninfected land; (3) remove diseased plants; (4) cultivate when dry; (5) spray with 5-4-50 Bordeaux mixture. For the prevention of lima bean blight, selection, rotation, destruction of rubbish, methods of planting, spraying were treated. He ended by stating that plant diseases were not inherent, but that there might be predisposing tendencies.

The third session of the League, Friday morning, was opened by Dr. VanSlyke, of Geneva, who spoke on "Recent Developments in the Manufacture of Cheese." He showed that the Pure Food law would have little or no effect on the use of rennet extract in cheese, for it is hard to detect a trace of it there. He thought that the 50% standard for butter fat in cheese, was not unjust, as many seemed to think. He favored a standard which should recognize the casein as well as the fat in milk, as the fat basis alone, does justice to the richer milk at the expense of the poorer.

"The Improvement of the Dairy Herd," was the subject of the next paper, given by E. H. Dollar, of Heuvelton. Mr. Dollar gave the story of the building up of his fine herd in St. Lawrence Co. At the age of 23 years he assumed the management of his present farm, with a herd of mediocre cattle. By careful selection, good care and a study of his breed, he has built up a splendid herd. He spoke highly of the influence of Experiment Station dairy literature.

Mr. H. E. Ross presented the subject of "Bacteria and Milk Infection," in a very able manner. He explained the nature of bacteria and the manner of infection. Bacteria were discussed under three heads: useful, harmless and harmful. It was shown that milk was one of the very best mediums or foods for bacteria, and pointed out clearly that every one who handles milk has a great responsibility in the matter.

"Certified Milk, as Produced on the Tully Farms," was the subject presented by R. D. Woolsey. He showed that contrary to the general idea, certified milk could be produced profitably by the ordinary farmer without a heavy investment of capital. He said that while it was true that most of our certified milk was produced by men of wealth, and usually with no profit, it was entirely possible to produce "*clean*" milk at six cents per quart.

Mr. F. M. Holmes, of Mecklenburg, in presenting his paper on "Feeding Dairy Cattle," explained how he had secured excellent results from bal-

anced rations made up from roughage, grain, and brewers' grains. He uses neither silage nor roots in his ration.

He was followed by W. C. Buell, of Holcomb, who spoke very interestingly on "Hot House Lambs." Mr. Buell has been very successful in raising these. He gave as two essentials of his success: (1), that lambs were dropped at least before December, and (2), that ewes contained either Dorset or Merino blood. Mr. Buell has averaged $10.50 apiece for his lambs this winter.

"Selection of Seed Corn and Oats" was well presented by Mr. H. N. Wells, of Portageville. He gave his method of selection as follows: Select for the vigor of the plant and seed, taking the hardiest and best plants,—those freest from disease and about whose ancestry the most is known. Fix in mind a standard or ideal and select for everything toward this. Mr. Wells has found the work not only profitable but extremely interesting.

Prof. Stone and Prof. Warren then spoke on the co-operative experiments planned in the league this year. Prof. Warren gave some valuable hints as to how to conduct experiments, stating clearly what kinds of data it was desirable to secure and how best to secure them.

The final meeting occurred in Barnes Hall at 2:00 P. M. F. L. Snyder, West Danby, gave a very earnest talk on the "Problems of Rural School Districts." He deplored the system that asked teachers to exist on from $250 to $350 per year, saying that inadequate salaries can but provide for inadequate teachers, and that it is necessary to arouse public opinion among farmers in order that these conditions and others may be bettered. There is also a great need of rural school text books, not so much, however, for those of good training, but for the teachers not up to the standard in ability. Teachers as a class could have great influence in keeping boys on the farm, although parents, especially mothers, must first be converted into wishing their children to become farmers.

H. H. Lyon, of Bainbridge, told "What a Rural School Can Do." Cornell leaflets, he said, form a very good nucleus for study, and Uncle John's personality lends much encouragement to pupils in country schools. Among the subjects taken up at Mr. Lyon's school were: Babcock and acid tests of milk, making Bordeaux mixtures, variety tests with potatoes, study of weeds and seeds, soil tests with litmus, alfalfa growing, etc.

"The Rural School and Industrial Education," by Supt. F. H. Briggs of the State Industrial School at Rochester, was the subject of an address to show the relation existing between the two. He said that the practical side of agriculture—which is industrial training—should be taught in the rural schools, thereby showing the child that his school work has practical and applicable value and making him become more interested in it.

The Committee on Officers announced the following selections for the coming year: W. H. Jordan, Honorary President; J. V. Salisbury, President; F. C. Stewart, 1st Vice-President; T. E. Martin, 2nd Vice-President; G. F. Warren, Director of Experiments; C. H. Tuck, Secretary and Treasurer.

P. B. Whiting, of Interlaken, discussed the "Equitable Distribution of Farm Products." He called attention to the 20,000 farms that are for sale in this State, and questioned whether farming in New York is as prosperous as represented. It did not seem to him that the farmer should market all of his crops in two months when twelve months will be required to consume them, for by so doing the price is lowered and farmers compete with each other. He advocated doing away with the middleman and dealing directly with the consumer.

The Ammerman prizes for excellence in investigation were awarded to Messrs. C. F. Osborne and L. F. Boyle and Miss Catherine Fuertes.

Dr. W. H. Jordan, of Geneva, gave a short talk on "Problems of Animal Nutrition," dealing mostly with the difficulties that beset the investigator along these lines. He said that to-

day great hesitancy is being displayed in speaking positively of the character of protein, the processes of digestion and assimilation, and scored the haste with which many investigators rush into print with conclusions that are insufficiently verified.

The last address was delivered by Prof. John Hamilton, Farmers' Institute Specialist, of Washington. His subject, "Agricultural Education Extension," embraced the work being done in Europe and in this country, also the practical results achieved on the two continents. The objects of education should be to (1) equip for self-support, (2) provide support for at least two other persons, (3) fit individuals for the appreciation of life. Prof. Hamilton said that our schools do not supply these objects.

THE SEVENTH ANNUAL BANQUET OF THE COLLEGE OF AGRICULTURE

Reported by M. C. Burritt, '08

THE Agricultural Banquet has become not only the greatest event of the year in the college, but nearly the largest affair of its kind in the University. The growth of this function of the college has been remarkable, three hundred and forty-eight more people being present this year than three years ago. Each year we have been able to say that the banquet was the best ever held. This year was no exception to the rule. In numbers present, in decorative effect and in the program, the affair excelled all previous and was a brilliant success.

The committee had planned to hold the banquet in the new building, but were compelled at the last to change their plans, because of the large number who signified their intention of being present, and the limited capacity of the agronomy laboratory. Where shall we hold our banquets ten years from now? A few more years the capacity of the armory will be outgrown. The members of the New York State Experimenters' League, which had just completed its session, and which included many prominent agriculturists throughout the country, were present.

The old armory presented a brilliant scene. Rothschild Bros. had covered the walls with large American flags and banners of red and white. Overhead streamers of the same color radiated from the center to the sides, and Cornell banners hung from many points. The speakers' table was arranged along the north side. The other tables extended from it at right angles and on either side, occupying nearly all the floor space of the armory. Alberger, the caterer, had arranged the tables. Sixty-five vases of red carnations—from the greenhouses of one of our students—together with large candelabra containing red candles, contrasted well with the white tables, further adding to the red and white effect of the scheme of decorations.

When at 8:15 o'clock the guests were seated, the five hundred and two places provided by the committee were occupied, every one. "Alma Mater" was sung lustily and when three short yells for our college were called for, they were responded to with a will. Between the courses of the menu the Agricultural Glee Club, which is a credit to the college, rendered many selections which were thoroughly appreciated and which added much to the enjoyment of the occasion.

When the tables had been cleared, the toastmaster, Mr. B. H. Crocheron, was introduced with a long yell. He justified the choice of the committee in every respect, presiding and introducing the speakers in a very able manner. In opening the toast list he said that he did not feel that he could welcome anyone in particular,—unless

The Seventh Annual

Agricultural Banquet

it were the waiters—because all were a part of the college whose banquet it was. The remarkable growth of the banquet was referred to. In 1904, there were 154 present, in 1905, 210, in 1906, 398, and now in 1907, 502, the increase becoming larger each year. It was also very opportunely remarked that the committee had omitted the usual space for autographs, and it was suggested that the collection of these so popular in previous years, be postponed until another time. He called attention to the "continuous performance" style of the toast list, which included, "Yesterday," "To-day" and "To-morrow."

Prof. H. H. Wing was introduced as the man who had placed the department of Animal Husbandry on its present firm basis. Prof. Wing began his reminescences of "Yesterday" with the statement that he was a Freshman in Cornell just thirty years ago. At that time there was no College of Agriculture. Agriculture was very crude, and Agronomy was not even thought of. Milk was taken "straight" and thought the better for it. "But," the speaker said, "although we had no college we had some fine men. Prof. Comstock was then as now 100 per cent or "bust" and Dr. Caldwell wielded the blue pencil in his department. Prof. Roberts was referred to as the man who had made our college and his name was greeted with applause. Through his watchfulness when the opportunity arrived, such men as Pearson, Rice and Slingerland were added to the staff. Facilities were few but men were willing to work. "Men can work without facilities, but facilities cannot make a college without work."

Mr. Grubb who "came from England but whose fault it was not," was next asked to respond to the toast "Why Is It." Mr. Grubb said that he had come prepared to talk upon agricultural education, and was much surprised to find himself scheduled for a toast on "Why Is It." The speaker emphasized the great advantage which the college possessed, in being a part of a great university, and pointed out the value of unconscious imitation. He feared that there was some truth in the accusation of some that agriculture was a "cinch" course. "We are largely judged," he said, "by the amount and character of the work we do, and if we are seen to apply ourselves more thoroughly this impression of agriculture will vanish. But the problem is: Is the agricultural student getting the solid ground training he should get? Energy and originality are necessities; is the technical training given here sufficient to meet these necessities? We need more hard work. Nevertheless, we believe that ours is the best Agricultural course in the country, as Agriculture is the most glorious profession in the world. 'Long life to the farmer.'"

Mr. H. H. Schutz next responded to the toast "What Is It," or the scope of agricultural education. He said that agricultural progress had necessarily been slow because of a lack of funds, but that this drawback would doubtless soon be removed. The speaker looked for much of the elementary work now in our Agricultural colleges to be done away with, and for more advanced work and cultural training substituted. He suggested the future possibility of a bachelor's degree in Agronomy, in Rural Engineering, in Horticulture, etc. "Agriculture is one of the oldest of the arts also the youngest of the sciences. The time is coming when an agricultural education will be considered as one of the most gratifying of a man's assets."

"To-day," was the subject which Prof. Pearson, "bachelor," spoke upon. He reminded us that although the space between yesterday and tomorrow is exceedingly brief, yet it is with the things of to-day that we are chiefly occupied. He characterized the scholarship in Agriculture as exceptionally fine and remarked that it was more difficult to enter the College of Agriculture than many other colleges on the hill. In enumerating the achievements of to-day Prof. Pearson considered the foundation of of the Roberts' scholarships as second only to the founding of the college.

He also considered that the monthly assemblies were making an enviable fame for the college and its Director. The prominence of the college, in athletics was referred to, the speaker prophesying cross country running as the branch of sport in which we were to excel in the future, because of the distance students had to travel between the new college and the other buildings of the university. "The adoption of the honor system in the college, marks an important achievement of to-day. Our students are honest, can be trusted and do not care who knows it."

Professor Pearson said that the actual occupation of the new buildings seemed like a dream, and he almost feared he would wake up some morning and find it wasn't so. We are now the third college on the hill in numbers, having a registration of 539. Of every seven students in the University one is in Agriculture. We have 69 teachers, 21 of whom are professors—which is five more than either Sibley or Civil Engineering have. This is the largest Agricultural college in the country, but even here there is only one student to every 415 farmers in the State. The State grants us $100,000 a year for maintenance. This sum seems large but it is only *three hundredths of one per cent* of the farm values of the State. However, we owe much to the State, which looks to us for results. These, our students must show, when they go out to their work.

Mr. Baker, of Syracuse, represented the members of the Experimenters' League in replying to the next toast which was to "The League." He said that he was proud to be a farmer and remarked the increasing interest which the world is taking in the farmer and his business.

At this point a quartet from our Glee Club rendered a selection and were heartily encored.

Mr. Kelly, responding to the toast "The Short Course," reminded us that if we did not hasten, "To-morrow" would be here before Professor Bailey found a chance to talk about it. The speaker, a graduate of the University of Pennsylvania, has certainly imbibed of the true Cornell spirit. He characterized Cornell as signifying all around excellence. "Every course," he said, "is a specialty, and every teacher a specialist. The Dairy Course is absolutely the finest in the country. "You Winter Course men are marked men. Much is expected of you. Do not disappoint. 'Cornell, may she ever be right, but always my Alma Mater.'"

The best had been reserved for the last. Dean Bailey was presented as "The College of Agriculture" by the toastmaster.

Professor Bailey said that there were seven steps in founding a College of Agriculture; first, secure the appropriation for it, the second, to establish it on a firm basis. He promised us the other five steps in fourteen years. The Dean paid Professor Roberts a glowing tribute, saying that it was his work which had made our present growth possible. Such a banquet as this, said Professor Bailey, would have been impossible five years ago, but now our time has come. It was to be regretted, he thought, that our honored ex-director could not see this banquet. Professor Roberts used to hope during the trying days of his work here, for such occasions as this.

The College of Agriculture is measured by its faculty and by its young men. When any man can come up here and say that he grew over 400 bushels of potatoes to the acre, there is no longer any danger that farmers will want to become lawyers and engineers. Perhaps there never were so many farms for sale as to-day—nor were there ever so many successful farmers. Business men realize and are taking advantage of these facts. This is not a change in the land; it is only a change in the times. The times have many changes to undergo yet. The country church is lost, the country schools are arrested. During the next twenty-five years we shall see the small towns develop as the cities have developed in the last twenty-five years. In the country we now find much the same type of church and school as existed there

fifty or even seventy-five years ago. We who are here now, must bring about these changes in our homes through our churches, schools and granges. Eighty-five per cent of the taxes of this state are paid by New York and Buffalo but much of this wealth was originated by the land, and would not be possible but for our farms. Therefore, state moneys must be used for the farmers as well as for the city man. The rural church has not kept pace with progress. It needs to get in touch with the real live things in which people are interested. What we need is *real, active* work.

Professor Bailey closed with the following verses :

BROTHERHOOD

Weather and wind and waning moon,
Plain and hilltop under the sky,
Ev'ning, morning and blazing noon,
Brother of all the world am I.
The pine-tree, linden and the maize,
The insect, squirrel and the kine,
All-natively they live their days—
As they live theirs, so I live mine.
I know not where, I know not what :—
Believing none and doubting none
What'er befalls it counteth not,—
Nature and time and I are one.

The wild bird fashions its nest of straw,—
The bird abides by its time and law ;
The forest stands by the night and day,
The flower blooms and it fades away ;
The earth grows green and the earth grows brown,
Life rises up and then death comes down ;
The life and soul of the things that be
It flows on and on unceasingly.

The wind blows out to the ageless sky,
And the astral clouds go floating by ;
The rain descends and the rivers flow,
The summers come and the winters go ;
The dusk returns and the morning light,
And call of day and the voice of night ;
The ages run to a silent sea,
Flowing and flowing eternally.

I am the bird in its nest of straw
And I abide by my time and law ,
I am the tree standing night and day,
And I am the plant that fades away ;
And men grow green and the men grow brown,
And life rises up and death drops down ;
And men, and life, and the things that be
They flow on and on unceasingly.

I am the wind that blows to the sky,
And ageless cloud that goes floating by ;
I am the rain and the river flow,
I am the seasons that come and go ;
I am the dusk and the morning light,
The call of day and the voice of night ;
And I pass out to the silent sea,
Flowing and flowing eternally.

AGRICULTURE OF OTHER NATIONS—IV

INDIA

By Jatindra Nath Chakravarty, G.

PLOWING IN INDIA

INDIA, as most people know, is situated in Southern Asia, and extends from 8° to 37° N. Lat., lying in both the tropical and temperate zones. Its area is about three-fifths of the continental United States, although the portion directly under the British Government is only about two fifths.

India is essentially an agricultural country, and in ancient times, the occupation of agriculture was held in high esteem. Although India was once famous for her fine Dacca muslin and the Cashmere shawl, which were highly prized by the most fashionable ladies in Paris, at the present time, almost the whole of the manufacturing population has been driven to agriculture. The sudden introduction of steam power, accompanied by the so-called free trade, has been too much for the old handicrafts.

The total culturable area in British India is about 63% of the total area, and of this about 70% is already under the plow. On this basis about 1.1 acre falls to the lot of each individual. The holding of one family in India is about six acres, compared to 146 acres in this country. But all of this area is practically arable, and corresponds to the improved land in this country. These are dry figures, but it is impossible to understand the agriculture of a country without knowing the size of the farm.

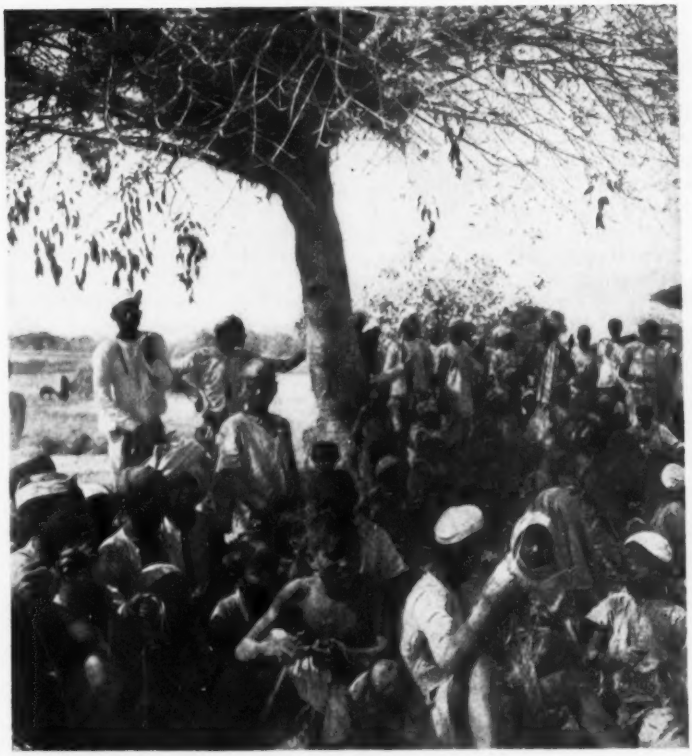
The Indian village may be said to consist of two parts, one where the people actually live and the other of the farms. The people of India are very gregarious, the houses being built very near to each other, the cultivated lands lying all around. An Indian village can be easily recognized, with its cluster of thatched houses, surrounded by the mango and bamboo groves, and then by the green fields stretching about. Each village is more or less self-sustaining. It is a state by itself. It has its own blacksmith, carpenter, washerman, barber, the potter, milkman, and fisherman. The majority of the population, however are cultivators or "rayat," as they are called. The population of a village is practically divided into two classes,—the upper few, consisting of the priest, the village schoolmaster, perhaps a medical practitioner and

one or two landholders, and the second class consisting of the cultivators and the mechanics. Education is practically confined to the few, as the poorer classes cannot afford to pay for the education of their children. However, they all live in perfect harmony and happiness. They are always ready to help each other. Up to a few years ago, everything required for the consumption in the village, was produced there, and the cultivator felt a pleasure in the thought that the rice that was being served to him, was produced on his own farm. There was no hankering for a city life, and the farmer was contented to till the soil during the day and earn an honest living. Conditions are, however, changing very rapidly. With the introduction of railways and telegraphs, distances have been shortened, and city luxuries are being brought to the villages. The ryat now finds that instead of using the cloth woven by his wife, it is cheaper to buy it from the village clothdealer, and convenient to confine his energies to the production of a few things only. Still the Indian villagers lead a very simple life. The "city civilization" has not yet reached them. They are still innocent of the pleasure of a "glass of beer" on a Saturday night, and finds greater pleasure in singing a few religious hymns in the evening.

However, as land is getting dearer, and as handicraft is being replaced by capitalized industries, there is a growing tendency to migrate to cities, in search of higher wages. There are, however, as yet no indications of "abandoned farms," and the tendency, if properly regulated, will rather help in relieving the congestion of the villages.

Climate is a very important factor, and with the frequent recurrence of famines, and the uncertainty of the climate, the question of irrigation has assumed serious proportions. India is one of those countries, under the influence of the monsoon. There are three well-marked seasons,—the summer (March to May), rainy season, (June to October), and the winter, (November to February). We have, of course, the spring and the autumn, but they are short lived, and are not sharply divided from the other seasons. The rainy season, and the cold season, are due, respectively, to the prevalence of the southwest and the northeast monsoons. The hot season marks the transition from the cold to the rainy season. As in the United States, the climatic conditions are very different in the different parts. Nowhere in the plains does the thermometer usually go below 32° in the winter, usually standing at about 50°, and in the summer it sometimes goes as high as 125° in the shade. Usually, however, not much above 100° F. On account of the mildness of the seasons, two crops can easily be raised in the year, where the rainfall is enough; and the two crop seasons are usually the rainy season, and the winter. The rainfall is confined during the months of the monsoon, the rest of the year being practically dry. The rainfall is very unequally distributed over the country, varying from seven inches in arid tracts of Multan, to over 400 inches in the hills of the Cherefunjee. The rainfall, morever, is very uncertain, and the failure or excess of rainfall has been frequently the cause of failure of crops in many parts. The importance of irrigation, in this connection, has been brought forward again and again. At present, only one-fifth of the whole cultivated area of British India, is under irrigation, but this is far from enough. The irrigation canals that have already been built, have been found to be more profitable than railways, and it is highly desirable that means of irrigation should be extended to other dry tracts.

The climate of India, although enabling the farmer to raise two crops, has acted detrimentally in other respects. It has been supposed to prevent the production of first-class animals, and stock farming, as carried on in this country, is almost unknown in India. All agricultural operations are carried on by bullocks. The weights of these animals vary from 250 lbs. in Assam, where the climate is hot and moist, to 1000 lbs. or more in the cold



A CROWD OF VILLAGERS

climate of the Punjab. It is impossible to use any but the lightest implements. A large majority of the people do not take any animal food, (except fish). The high price of land, the small area of the holdings, and the want of proper transportation facilities for dairy products, are factors which have prevented the practice of dairy farming, and very little attention has up to this time been paid to animals. Care is, however, now being paid to dairy farming, and attempts are being made to breed better types of animals, and to introduce forage crops.

Blessed with a fertile soil, and a moderate climate, India raises a very large variety of crops. Although so much is heard about rice and wheat, the various millets constitute the staple diet of India. Rice is grown mainly in the east and southeast, and wheat in the northwest ; but both rice and wheat are too expensive for the common people. The most important field crops of India are millets, rice, wheat, cotton, sugar cane, tobacco, indigo, oil seeds, jute and various pulses.

India ranks third among the countries supplying the wheat market of the world, the United States occupying the first position. Rice is grown under somewhat peculiar conditions in the Gangetic delta in Bengal. This part of the country is flooded in the rainy season, and remains wholly under water for about four months. The paddy is sown when the land is still dry, and the flood begins to come when the plant is about 2–3 feet high. The plant then grows, with the rise of water sometimes growing more than two inches in one night, the top of the plant always remaining above the water unless there is an extraordinarily heavy flood. Sometimes the plant reaches a height of more than thirteen

feet. The paddy is harvested when the water recedes. Jute is also grown under very similar circumstances, and is usually harvested under water.

Agriculture in India has been carried on perhaps for thousands of years without much change in the methods. The land is still ploughed with a wooden plow having an iron share and without a mould board; the grains are still harvested with the sickle. The plow, a roller, a ladder, the wooden harrow, the sickle, and a hand-hoe are all the implements that an ordinary cultivator uses, and with a pair of bullocks constitutes his investment for the farm. The cultivator, however, is not ignorant of what constitutes good methods. The land which has been cultivated for centuries is still fairly fertile, bearing testimony to this. Although he knows nothing of the bacterial actions in soils, he knows full well that a cereal should be alternated with a leguminous crop, and he applies all the manure that he can get hold of on his farm. Growing deep-rooted and shallow-rooted crops in the same field is a very common practice. The reason why agriculture does not make much progress in India, lies in the poverty of the cultivator. Some European implements have been found to be much better than the primitive native implements, and they have been adopted by many farmers, but their initial cost has prevented the bulk of the farmers from using them. The three great needs of Indian agriculture are stock-farming, introduction of improved implements, and the improvement of plants and animals by breeding and selection. But the first two require money. Improvement of Indian agriculture requires capital; and not only people with money should engage in agriculture, but the farmers should be educated and their wages raised by diverting a part of the population to industries and manufactures.

It is to be hoped that the combined efforts of the government and the people will soon bring about a better condition in the agriculture of the country, so that famines will not be an every-day occurrence.

CLEANING COTTON

THE WORKER

A WALKING SUMMER SCHOOL OF AGRICULTURE

By H. S. Ogden, '06

Editor's Note—This article is the story of a man in earnest. Mr. Ogden was a student in the College of Arts who took work in agriculture because he wanted to become a farmer. Realizing his lack of experience and wanting to see the eastern part of the country from an agricultural standpoint, he went for two months from place to place working his way as a farm hand. Starting with a revolver, a kodak, part of a "cyclopedia of agriculture," a few clothes and $30, (for necessity only) and dressed in things that are said to have been a "sight", he worked his way down to the Eastern Shore of Maryland. At that time he was compelled to give up his trip because of other matters which required his attention. Mr. Ogden is now at San Diego, Cal., where he contemplates buying a fruit ranch. Mr. Ogden knew little agriculture but he had lots of sand.

ON July 16, 1906, I left Ithaca by an eastbound Lehigh Valley train in quest of experience in practical agricultural methods. My material outfit consisted of an Eastman kodak, tripod and a miniature suitcase. Nor should be forgotten what I called my "emergency fund" of thirty dollars. My immaterial outfit consisted of one term in the Cornell College of Agriculture, and a determination to gain experience in actual farming by working my way through the country. I planned to follow the Atlantic coast states, working in one farming district until enough savings were accumulated to pay railroad fare and a little over to the next, where I hoped to "rustle" another job. The "emergency fund" was something to fall back on only in case of dire necessity. I travelled dressed, of course, in rough looking clothes but carried in my small suitcase the wherewithal to make myself presentable when occasion demanded, as, for example, in visiting the different agricultural experiment stations. It was not possible to follow in every detail the route marked out since I was forced to accommodate my movements to the labor demand—skipping sections where help was over plentiful and remaining longest where work could be obtained.

The sun was shining brightly, and although slightly apprehensive, my hopes were high when the train pulled out from Ithaca. But it was a rainy and dismal afternoon when at four o'clock, I reached my first destination, the village of Lebanon in northern New Jersey. Much preferable indeed was the warm comfort of the car to the prospect outside—chilly in more ways than one. I knew from past sad experience that he who pays his way by silver is assured a more certain hospitality than he whose coin is farm labor. The train stopped, so dismissing philosophical reflections to a more appropriate season, I gathered together my belongings and stood a moment later on the little station platform watching the train disappear into the fog and mist.

Yes, I was decidedly "up against it" at last. Night was approaching and my first care was to make sure of the primitive wants, shelter and food. Inquiries developed the fact that the "Hotel" seemed the only place to go, though later on I learned that "workingmen's boarding houses" usually to be found in country villages, furnish respectable accommodations and are much cheaper. Being, then, less experienced, however, I went slippity-slop through half a mile of mud to the Hotel. Apparently even this asylum for the stranger was deserted, but after repeatedly ringing a bell marked "Ring for the clerk" this gentleman appeared in person. The rates, he said, were two dollars a day.

Two dollars a day! A sudden painful vision crossed my mind of my small excess of capital vanishing into the clerk's receptive palm. Rain or no rain I grimly resolved to hunt a job. Unfortunately, however, rainy weather hinders farm work, making farmers chary of taking on a new hand. My applications were turned down with a uniformity and certitude that finally grew both monotonous and irritating. At dusk, several miles from the village and, like Joseph in Egypt, a stranger in a strange land, I perched awhile on a rail fence by the roadside nursing, grieved and revenge-

ful sentiments against the world in general and the agricultural population around Lebanon, in particular. I resolved to make another effort and with the usual result. But as I turned away, the farmer, perhaps noting my disappointment, pointed out a white farmhouse a half mile distant at the base of a green hill, advising me to "try over there". As I approached the barnyard of the place indicated, I heard the sound of saws and a moment later came upon two men cutting rotten railroad ties for firewood, each man pulling and pushing alternately at either end of a long saw. I was tired and wasted no time in useless preliminaries.

"Do you want a man?" I asked. The elder of the two looked me over curiously as though I were a new specimen.

"Why, yes," he replied, then hesitated and added somewhat dubiously, "Can you milk?"

I told him that I could, whereupon he imparted the information that he had twenty cows. Here the conversation flagged and I sat down on a railroad tie until he should see fit to resume. The next question revealed his thoughts.

"How much do you want a day?" he asked.

The direct question caught me unprepared Briefly, I wanted as much as I could get but I had not reduced the matter to dollars and cents. Happily an escape from the situation presented itself and I offered to work a day at the end of which, he knowing my abilities better, we could strike a bargain. He next inquired, where my belongings were, saying that by the time I could fetch them supper would be ready. With a glad heart I returned to the Hotel. On the way I met a covered rig and in it was the farmer who had directed me to my present "place." He leaned out and smiled a recognition.

"Did you get a job?" he inquired. "Yes," I answered, "and I am much obliged to you."

"Well," he called back, "you're with good people. They'll take good care of you." And he was right.

In continually changing environments one is subjected to an unceasing mental strain. The continual effort to grasp new situations and "size up" new personalities was throughout the trip a drain on my nervous energy.

This farmer's family consisted, I found on returning, of his wife and eight children, the children watching my movements with an embarassing intentness. The supper was less elaborate than the family, being stale bread crusts which could only be reduced from their flinty hardness by prolonged soaking in a bowl of milk provided for that purpose. The meal forced upon my notice a fact which was to impress me later more than once. Namely, that the wholesome country fare deliciously described in novels is not so universal an occurrence as generally supposed by city dwellers. But what the meal may have lacked in variety was made up in hospitality and I soon felt at home. When the farmer asked my name I had told him my surname. "Yes," he had said, but—your first name?" "Horace," I replied, and "Horace" I was from Lebanon, N. J. down to the Maryland Eastern Shore where my journey ended. Nor could I help reflecting, as we ate supper together, upon the economies of rural life whereby I, a few hours previous a perfect stranger, had been warmly received into the heart of their family life.

The meal over it was quite late and being thoroughly tired, I asked where I should sleep. The farmer escorted me up a winding stair to a small attic room, and bidding a pleasant "good night" left me alone. I turned in with little ado but first scribbled in my diary this entry:

"July 17. Struck Lebanon—got a job."

* * * * *

Next morning a quarter before six I awoke wondering if they had forgotten to call me. Five minutes later I was down stairs washing at the pump. It was not until six o'clock that the "boss" himself stepped out of the house. Surely this was a leisurely family. At the farmer's bidding I

went to the pasture bars and lustily carolled "co boss, co boss," to the cows herded about a quarter mile distant. They contemptuously disregarded my hallooing and it was not till I had danced several impromptu flings, thrown sticks and stones into the air and in other ways forced myself upon their placid natures, that they slowly started a long line toward me. Milking over and the horses harnessed we had breakfast, then hitched up to the rack and started for the hayfields. The easiest part of the work fell to me, that is, remaining on the rack to place the forkfuls of hay pitched up from below, keeping the corners of the load square. When a full load was on I drove to the barn where the hay was pitched into the loft, the farmer not having installed that labor-saving device, a "hayfork." I enjoyed the drives from the fields to the barns. Once unskilfully I caught the front wheel in a deep rut; the rack lurched to the left with a jar that joggled off no small part of the load, much to my mortification and the silent disgust of the other two.

At noon we had an hour's rest, then hayed until six, the wife and children doing the evening milking which began about five o'clock.

In the evenings my time passed pleasantly telling stories or talking with the children, and when these had been sent to bed the farmer and I smoked and discussed agriculture in the dining-room. In these evening discussions my role was a silent one and that for two reasons, first, extremely limited knowledge and second, desire to learn from another's experience. My employer talked readily, illustrating his points with references to specific fields or trees and taking pains to point these out during the following day's work. He owned a fine peach orchard which we sometimes visited together in the dusk, he continually explaining and showing various things.

How one does appreciate Sunday in country life, the day of respite from straining physical effort! My first Sunday in Lebanon was interesting as serving to define clearly the social position I occupied in the family as a "hired man." A wagon load of neighbors came to dinner, among whom were two strangers. These two were introduced all around with one exception. I was left out. Yet I could not reasonably cherish the slightest resentment. It was perfectly natural.

The preceding Saturday I had informed the farmer of my intention to leave the next Monday morning, refusing a gratifying offer to remain two months longer. I should have greatly enjoyed staying, for kind friends and a home were assured. Beyond loomed again the "cold, cold world," and soon I would be riding into another strange village and roving country roads in quest of work.

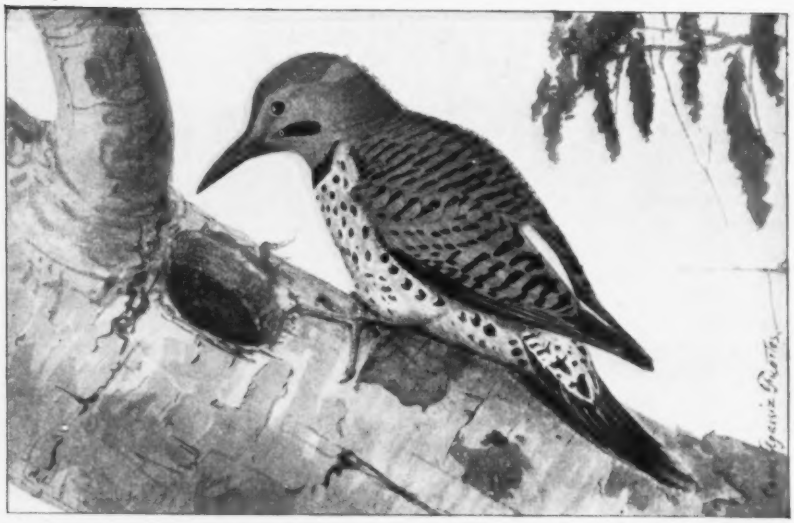
During my four days I had made four dollars in addition to "my keep." With this surplus I bade farewell bound for the busy trucking districts around Swedesboro in southern New Jersey.

(To be continued)

OUR WINTER BIRDS IN THEIR RELATION TO AGRICULTURE-V.—THE FLICKER

By Vaughan McCaughey, '08

BIRDS that are closely related to one another usually have a general uniformity of habit. Exceptions to this law are usually accompanied by more or less marked variations in structure. The flicker is an excellent example of the exception. All of our other woodpeckers have the common trait of being tree-loving birds, feeding on boring grubs, having chisel like bills and barbed tongues for that purpose. The flicker, however, has evoluted along a different line. His fondness for ants has made him an inhabiter of the open meadows. His bill is not a chisel, straight and square pointed, for working in wood, but a pick-axe, curved and sharp pointed, for digging in the soil. His



THE FLICKER

tongue, instead of being barbed, like a spear, to drag forth grubs from their sinuous burrows, is merely rough, and covered with sticky saliva, to more readily pick up the ants that form so large a part of his diet. To secure these desired titbits, the flicker spends much time on the ground, quite unlike the woodpeckers, and even sits crosswise when he perches, which is perfect heresy for a woodpecker. Indeed, he is strongly individualistic, one of the "unlike," therefore smacking of genius.

The flicker rarely spends the winter in the north, for frozen ground means low food supply, and although berries and grubs will do, nothing is quite so acceptable as are ants. If he does linger throughout the winter, he is usually found in swampy places. The immigrants return during the last of March.

The flicker is one of the most well known of all the woodpeckers, and his various local names are well nigh innumerable, ranging from the correct and respectable title of Golden Winged Woodpecker to the graphic colloquialisms of Yellow-hammer and Highhole. He is easily recognized by the conspicuous white spot just above the tail. No other woodpecker has this mark.

Some idea of this bird's fondness for ants may be gotten from the results of the examination of several stomachs. Two contained over 3,000 ants each, and the third contained over 5,000. Ants form nearly half of the total food, although beetles, caterpillars, grasshoppers, spiders, etc., are also eaten. It is difficult to judge definitely of the flicker's economic importance, because we are not sure of the agricultural importance of ants. The flicker has been accused of eating corn, but a study of 230 stomachs, taken at all seasons of the year, showed only five to contain corn. The flicker does but little or no harm, and should be well protected.

RURAL PROGRESS IN THE KEYSTONE STATE

By Joseph Davis, '08

PENNSYLVANIA ranks as the second wealthiest state in the Union. In annual mineral production she stands first, second in manufacturing and eighth in agriculture.

According to the twelfth census, farm property in Pennsylvania is depreciating at the rate of $1,131,067 per year. The value of farms, including lands, fences and buildings aggregated in 1880, $975,689,410; in 1900,

$898,272,750. Farm lands have become a drug on the market; stripped of the virgin forest, and with fences and orchards fallen into decay, they now sell for less than the buildings upon them cost.

Of the 67 counties in the state, 9 contain fewer people to-day than in 1880; of the remaining 58, 14 report an increase of less than 10%. Visitors from the West are prone to comment on the dearth of young farmers. To the casual observer it might appear that the mature and aged had retired to the farm.

The schools of a commonwealth serve as a good index to her industrial progress. At the present time instruction in agriculture is not given in one public high school in the state; even the normal schools go no further than a very elementary course in zoology. For years the State College has been fettered by a legislature representative of city interests. Only three years ago $150,000 was appropriated for an agricultural building, but the Governor, in his zeal to give his state a capitol building worthy of its wealth, cut off $75,000. The capitol building now stands completed at a cost of $13,000,000; while the agricultural building has for a year stood unfinished.

Last June three men received the degree of B. S. A. at the Penn State College, 13 at the N. C. College of Agriculture and Mechanic Arts, and 27 at Cornell.

Very recently the Board of Trustees of the College has taken steps which will ultimately affect the complete reorganization of the Experiment Station. On the first of next July, Prof. Armsby becomes Director of the new Institute of Animal Nutrition; Prof. Hunt replaces him as Director of the Agricultural College and Experiment Station; B. E. Fernow becomes Professor of Forestry, and Dr. Alva Agee, Professor of Agricultural Extension and Principal of the Short Courses. Two of the strongest men in the '06 class at Cornell have accepted instructorships.

These men are to be the leaders in a new movement. Back upon the stony hillsides of the Keystone State, there dwells an army of iron hearted toilers. For the sake of the old farm they prefer to work for a mere living rather than to move to the city or go West. In such homes there is springing up a host of sturdy boys and girls who thirst for knowledge and training.

HOW TO SEE SCENERY

By James Vaughan Weeden, W. '07

IT is natural for man to enjoy nature. He is a part of nature and developed stage after stage from the one-celled animal. Becoming a part of nature again is the most restful and beneficial thing that man can do. If there is a universal spirit that is a part of all animate and inanimate things, man in partaking of nature brings this force into his being again.

The object in wishing to see scenery is to increase one's powers of enjoyment. One learns to appreciate the beautiful, and to feel the power of scenery.

By observing scenery when out of doors one learns to admire scenery in a general way. If the landscape is grand or impressive, the observer should notice it. Or it may simply be pretty, or quiet, still, or restful. If the outlines are graceful they should be noticed. The artist looks at nature from the standpoint of the beautiful. The colors, outlines, noises of animals, or rhythms of the scene impress his imagination. A scientist gains more from contact with nature than the layman. If he is broadly trained, he knows the meaning of every object in nature, and a walk out of doors will suggest many thoughts. Nature includes both the finite and infinite, and when one communes with nature he ministers to his soul.

If one loves nature he observes scenery, and the benefit that one gains from seeing the beautiful in out-door scenery makes it worth doing. In training the eye to see things in the outside world, one learns to notice details and hidden indications of cause and effect. We learn by doing, and the way to learn to see scenery is to go out doors and see scenery.

The Cornell Countryman

B. H. CROCHERON, Editor
H. F. PRINCE - - - Alumni Editor
MISS P. B. FLETCHER,
E. L. BAKER, - Associate Editors
E. L. D. SEYMOUR,
M. P. JONES - - Business Manager
E. G. McCLOSKEY,
S. F. WILLARD, JR., - Assistant Managers
G. H. MILLER,

APRIL, 1907

Life and the College

SOME colleges are dead: others merely exist. Our college is alive. Evidences not only of growth but increased vitality are so common as to almost escape comment. Within two months the change has been enormous.

The total enrollment of students increases as rapidly as is desirable. The courses of study multiply in number and grow in efficiency. New buildings open and are dedicated, while even others to follow are being planned.

The alumni, banded together for experimentation, meet in sessions which are remarkable for their enthusiasm. The former students spread the fame of the Cornell College of Agriculture and prove the efficiency of the training. In so doing they cause so large a demand to be made upon the college for men to fill positions, that the Director puts a "want ad" in the *Countryman*, and the Professor of Dairy Industry gives notice that he has more applications than ever before to fill positions in all branches of his subject. A Professor in Agronomy states that a directory of old students should be kept to facilitate filling positions as the lack of men has become embarrassing. There is, doubtless, an equal dearth in other departments.

The undergraduates are more actively engaged than usual. A new club for those interested in Animal Husbandry forces itself upon the attention of the overloaded student. The Agricultural Association gives one of the largest banquets ever held at Cornell. An Agricultural College song book is published and people are found to buy it. A traveling summer school with its private car is again threatening to jaunt over the country in an attempt to cram large amounts of learning by a new and attractive route. Everyone sends in an application for a Roberts Scholarship and attends the Poultry Show, which was again the biggest, best and busiest that was ever held. The Honor System arrives. College and system are said to be doing well.

The faculty of the College have kept up their share of the forward movement. We never knew there were so many learned societies in this country until the faculty of Cornell became the executive officers of all of them. Titles descend like rain upon the professors, who in self defense write an unprecedented number of books. The first volume of the "Cyclopedia of Agriculture," of which Professor Bailey is Editor, the manual for "Examining and Grading Grains" by Professor Lyon and a collaborator, and Professor Hunt's "Forage and Fiber Crops of the United States," are either just published or will be within a few weeks. Beneath all this weight of material the presses groan. It is whispered that the students may later do the same,—but that, by the authority of Mr. Kipling, is another tale.

Professor Bailey states that but two steps out of seven have been taken toward the foundation of a College of Agriculture. We wish we could be here when they make that seventh jump—one can't call them steps.

With the present development of which we are in full enjoyment, and with that conception for the future, it is high time that each student showed his allegiance to agriculture and the College. We very much doubt if there ever was a period when agricultural students had cause to be silent concerning their College and the profession, but certainly such a time is not now.

It has been said that the College of Agriculture is the most enthusiastic at Cornell. It would be remarkable if it were not. We have more to be proud of than most colleges; for the College of Agriculture is alive and it is through that life that the future will open for the students.

Dedication

THE new buildings of *the* college are nearing completion. Up on the highest point of the campus, above the other structures of Cornell there stand in solitary grandeur the buildings which are to comprise the nucleus of the New York State College of Agriculture. It is planned that in the last week of April the dedication ceremonies shall take place.

On April 26th the centennial of the birth of Ezra Cornell is to be celebrated. It is hoped that on the day following, April 27th, the formal rites will be performed which will open the new agricultural buildings. Governor Hughes, Dr. Andrew Carnegie and other prominent persons are expected to attend. The exact nature of the ceremonial has not at this writing been decided upon nor the date definitely and finally fixed. It is known, however, that the affair will be of such a character that the farmers of the State will be well represented. It is hoped to make the event both popular throughout New York and important in the history of Cornell.

To this end, all alumni of the College of Agriculture should—if it is in any way possible—demonstrate their debt to the college and their interest in Cornell by attendance at Ithaca during the two days of the celebration.

The affair will doubtless be the largest of its kind ever held by the University. The College of Agriculture will certainly do its share in making the event a memorable one.

The College Scramble

THE regular student in the College of Agriculture takes required work almost entirely for the first two years. He has little chance to elect other subjects. His course is mapped out for him. His feet travel along the thorny path of knowledge but he is guided by the articles-of-war which emanate from the faculty.

The Junior year opens a glorious vista of electives. He takes a course in Horticulture, one in Animal Husbandry, one in Dairying, another in Poultry and then rests from his labors during the summer vacation. The Senior year gives him a chance to take Economic Entomology and Plant Diseases together with Meteorology and "The Farm Home" with a very few advanced courses in the different branches. He writes a thesis upon something of which he knows nothing and emerges triumphant in June with a diploma in his fist and a lot of loose facts in his head.

Afterward he finds time to think. If he is an average student he has come through college with a "general education" but absolutely no thorough preparation in anything. He has joined in the scramble and has pulled out some miscellaneous facts which are of no more specific use than to aid him in the indefinite exercise known as "broadening one's mind." In fact, he is sometimes broadened so much that he stretches his college gown which discloses, between the threads, strong evidences of real naked ignorance. He is broadened agriculturally but not prepared. He is added to the ranks of the unfit who lack a real knowledge of anything. He can quote platitudes and discuss generalities but cannot show any definite advanced learning on any one subject.

It has often been said that the College of Agriculture is a combination of colleges. To master the several branches of agriculture will take several times two years. No man *can* know all the branches of agriculture at the end of but four years' preparation. He, who would know something, must either devote himself to one branch or take a post-graduate course.

Occasionally among the ranks of the undergraduates there looms up a man who knows something. He has studied one thing thoroughly. He has a concise and exact knowledge upon a question of agricultural interest. His success is immediate and marked.

The majority, realizing the great store of knowledge opened up in the "agricultural electives," waste their time flitting from subject to subject in a vain attempt to carry it all away with them.

Get down to one thing and learn that.

GENERAL AGRICULTURAL NEWS

The Second International Congress of Agricultural Mechanics is to be held as a section of the Eighth International Congress of Agriculture which meets at Vienna Austria, May 21–25, 1907. The section will give particular attention to the establishment of uniform international rules for the examination of agricultural machinery, instruction in agricultural mechanics, and the promotion of conditions favorable to the more extended use of agricultural machinery.

* * *

Several important agricultural bills came before Congress as;—a bill providing for the printing of 50,000 copies each of the Special Report of the Diseases of the Horse and the Special Report on the Diseases of Cattle; $50,000 additional for demonstration farms in the cotton boll-weevil district; $250,000 for the eradication of the Texas fever tick and the reclamation of swamps; besides a deficiency bill—to enable the enforcement of the pure-food law.

* * *

According to "Science" Mr. A. F. Burgess, Secretary of the Association of Economic Entomologists, has tendered his resignation as state inspector of orchards and nurseries for Ohio, to go to Massachusetts to experiment with insecticides for the destruction of gypsy and brown-tail moths.

* * *

The Society for Horticultural Science, president, Dean L. H. Bailey, and the American Pomological Society with Mr. C. A. Goodwin, of Kansas City as president will meet on the grounds of the Jamestown Exposition on September 25 and 26, 1907.

* * *

The Connecticut Agricultural College, Storrs, Conn., is giving a sec-

ond poultry course of six weeks in the Winter School for Agriculture, enough applications having been made to warrant beginning the course February 20, 1907.

* * *

Prof. Shaw who for the last four years has been assistant professor of agriculture in the New Hampshire State College has resigned to take a position in the Bureau of Animal Industry, at Washingion. Prof. Shaw is to have charge of the work on sheep and goats and will begin his new duties at the close of the present college year.

CAMPUS NOTES

The Fourth Annual Poultry Show of the Cornell University Poultry Association was held February 13, 14 and 15, proving the most successful show ever held here, and exceeding any previous show in attendance, entries, sale of reading matter and advertising space, size and arrangements of hall, and excellency of cooping. The show took place in the basement of the Agronomy wing of the new buildings, being thus convenient for visitors and particularly so for those in charge. The success of the show was due to the hard work of every member of the Association.

The two-fold object of the show—namely to encourage the raising of pure bred poultry and stimulate interest in Poultry Husbandry, and to give the students in the Poultry courses experience in managing such shows, and in selecting, preparing and entering birds in shows, was fully accomplished. The time spent by the classes and instructors of the Department was repaid in full by the success of their efforts.

The show was judged and the birds scored by Mr. T. F. McGrew of Washington, D. C., whose scores were also used to determine the winners of the various prizes offered for the best work done in student scoring. The practice of giving prizes was begun last year by J. G. Halpin, now of the Poultry Department of the Michigan Agricultural College, who offered a prize of $5. This year other prizes were offered and won after much competition.

The exhibit by the Poultry Department was undoubtedly the best ever shown of instruction work along this line. Students' drawings, enlarged photographic reproductions of views of the Department, and different breeds of fowl, models of houses, trap-nests, methods of dressing and packing of fowls and eggs, caponizing tools, cramming machines, bone-cutters, etc., were shown and elicited much attention. Particular interest was shown in the full-sized model of the gasoline colony brooder-house, perfected by the Department; this house has a capacity of from one hundred and fifty to two hundred chicks, with wicks needing trimming and attention but once in two weeks. Another feature was a model of a center front house recommended for New York State. The improved Cornellian Trap-Nest, invented by Mr. R. C. Lawry, was also shown and conceded by all to be the best and most practical trap-nest in use today.

* * *

On Monday, February 25, Dean Bailey attended an important conference in Washington, as representative of the Association of American Agricultural Colleges and Experiment Stations, of which he is president. From Washington he proceeded to Chicago to attend a meeting of the Committee on Industrial Education in Schools for Rural Communities of the National Educational Association. This committee has in its charge the publication of a report on the status and condition of education in rural schools, which is to be presented at the meeting of the Association at Los Angeles in July, and is later to be printed and distributed. The editing of the report is in Professor Bailey's hands.

* * *

The Committee upon Graduate Study of the Association of Agricultural Colleges and Experiment Stations decided to hold the Graduate

School of Agriculture at Cornell in the summer of 1908. Dr. A. C. True, Director of the Office of Experiment Stations and Editor of the Experiment Station Record, will hold the position of Dean of the School.

* * *

The students especially interested in Animal Husbandry have lately been making numerous plans. On Friday evening, February 28, fifteen of them organized a club patterned after the Lazy Club of the Horticultural Department. The club is to be under the general direction of Prof. Wing, though the students will furnish the programs and support it with their interest and enthusiasm. The meetings are to be held on Monday evening of each week in the Dairy Building and those interested in the subject will be warmly welcomed.

* * *

On March 1st the registration for the Inter-college crews closed with 42 candidates from the College of Agriculture. Further preparations for a crew have already been made, M. C. Haight, Sp., being elected captain and W. H. Alderman, '08, manager of the prospective organization.

* * *

The combined classes in Animal Husbandry and Farm Machinery made an excursion to Auburn and Syrcause on March 20, 21 and 22, under the direction of Professors Wing and Gilmore. The Farm Machinery students visited the International Harvester Company's Plant in Auburn, and the Syracuse Plow Company in Syracuse on the 20th, and the Animal Husbandry men of that class continued with those taking only Prof. Wing's course in making a tour of several fine dairy farms.

* * *

As a token of their appreciation of his able instruction and of the high regard in which they hold him, the students of the Short Course in General Agriculture presented Professor Stone with a silver loving cup. It is some ten inches in height and engraved with an appropriate inscription.

Preparations are being made in Ithaca to further the interests of school gardens. Two well-developed gardens are planned, one near the new school house on the Campus, and the other downtown for the use of the public schools of the city. These will be planted, cultivated and harvested by the children. Experimental work will be carried on in the interests of public school extension work.

The practice class in School Gardens, Course 94, which is now for the first time a two-hour course, gives University students actual training in the conducting of such gardens, and the large registration and interest evinced in the course is encouraging for the future of school gardens as an education feature of public schools.

* * *

On February 26th, the principal feature of the meeting of the Agricultural Association, was a talk on "Bees" by Mrs. A. B. Comstock. By means of several years' study of bees and their habits and through much experience, Mrs. Comstock has made herself one of the foremost authorities on the subject. Mrs. Comstock divided her talk into two parts, first taking up the hive, its structure and contents, and the bees themselves, giving a brief account of their life and accomplishments. In the second part of the talk Mrs. Comstock considered the bees and their product from the more commercial side and gave some valuable advice to the beginner in apiculture.

* * *

Dr. C. F. Langworthy, of the Editorial Staff of the Department of Agriculture, a specialist in Zoötechny and Human Nutrition, lectured here last month to the course in Domestic Science.

* * *

Cornell was represented at the Farmers' Institute meeting in Elmira in the latter part of February by Dr. T. L. Lyon, who spoke on "The Selection of Seed Corn."

AT THE 1907 POULTRY SHOW

After considerable delay, the furniture and equipment for the Agronomy Building have arrived and are rapidly being installed.

* * *

A representative of the College attended the funeral of Mr. G. A. Fuller, Master of the State Grange, at Philadelphia, N. Y., in the early part of the month.

* * *

The Lazy Club meeting of February 28 was "Carnation Night." An interesting and beautiful display of the flowers was on exhibition. These were furnished partly by the Horticultural Department, but principally by prominent companies in several of the larger cities. They included some fine specimens of very beautiful types.

* * *

The early start in the winter courses proved itself so satisfactory and distinct a success, that it will probably be repeated next year. In the dairy course, as an example, the men were able to finish their work and to accept positions in time for the opening of the factory season—which, heretofore, they were unable to do.

* * *

The Horticultural Department was lately in receipt of an interesting specimen of apple. A distinct line divides the fruit into almost equal parts, one being highly colored, the other a decided green. Each portion of the apple presents the appearance of a variety differing widely from the other.

* * *

Professor James G. Needham has been appointed Assistant Professor of Limnology in the department of Entomology. Professor Needham held the Entomology Fellowship in '97 and '98, in the latter year receiving his Ph.D. In the past he has been Professor of Biology at the Lake Forest University, Illinois, and is connected with the New York State Entomological Field Station. When in the University he was one of the founders of the Jugatæ, suggesting the name which the society bears.

Limnology, which will be offered in separate courses in the Entomological Department, by Professor Needham,

next year for the first time in any University, is the study of life as it exists in marshes and inland waters. Professor Needham's work will be largely along research lines, though including some class work.

* * *

Professor J. H. Comstock has been elected President of the Entomological Society of America. This Society was organized in New York City in December, 1906, and is affiliated with the American Association for the Advancement of Science. Its membership is already over two hundred and fifty, the members coming from thirty-six states, four provinces of Canada, from Cuba and Hawaii.

* * *

Dr. T. F. Hunt has recently been elected President of the Society for the Promotion of Agricultural Science, a society limited to 100 members. Of late years it has been meeting with the Association of American Agricultural Colleges and Experiment Stations. Dr. Armsby of the Pennsylvania State College, is the retiring President.

* * *

The first volume of Prof. Bailey's new Cyclopedia of Agriculture appeared in the latter part of February and the other three volumes are to be issued at short intervals. This publication marks a decided advance in agricultural literature, and like its Horticultural counterpart, stands alone in its field. There has been no comprehensive work of this kind, of recent date, in the English language, and its publication will prove of immense benefit to agriculturists and general students.

* * *

Dr. T. L. Lyon's book on "Examining and Grading Grains," is also just off the press. E G. Montgomery, instructor in Agronomy, University of Nebraska, is joint author. This book is a laboratory manual of college grade that will very probably fill the urgent need felt for a work of this nature.

At a recent meeting of the Experimenters' League one hundred dollars was contributed by members of the League and others, to be awarded for the best experimental work done in the League during the coming year. The names of those contributing are: E. W. Mosher, C. Chapman, F. H. Briggs, E. M. Santee, F. E. Rupert, L. H. Bailey, H. B. Winters, W. H. Jordan, F. A. Salisbury, J. L. Stone, H. H. Wing, R. A. Pearson.

* * *

On Friday, March 9th, Professor Cavanaugh spoke at a meeting of the "Western New York Evaporated Fruit Association," held in the Chamber of Commerce Building, Rochester, N. Y.

* * *

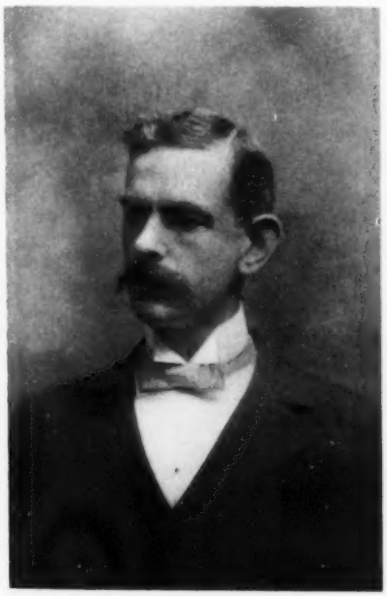
The success of the Assembly of Thursday, March 7th, was largely due to the hostesses, Mesdames Hunt, Wilson, Fippin, Needham, Swaine and Delaney, who were assisted by Messrs. Seymour, Taft and Tillson. The program consisted of a violin solo by Professor Judson, a piano solo by Mr. Previn and Professor Bailey's address. This was interspersed with readings from Sidney Lanier, Wordsworth and Matthew Arnold, and concluded with the recitation of Professor Bailey's latest poem, "Campanula."

FORMER STUDENTS

'77, B. S. in Agr.—Frederick M. Pennock was born in Kennett Square, Penna., July 5, 1855; and was graduated as Bachelor of Science in Agriculture, at Cornell, in 1877. His father, Samuel Pennock, who was an inventor and manufacturer of agricultural implements, took out a patent for a machine to make and repair earth roads, about the time that his son Frederick completed his course. The latter, giving up an ambition to be a landscape gardener, started out in 1878, without previous business experience, to find a market for the new road machine. During three months of that year, and the latter part of 1879, he travelled in Ohio and Indiana

exhibiting the new invention, taking contracts in order to introduce it, thereby effecting numerous sales.

At the beginning of 1880, Mr. Pennock joined his father, his two younger brothers and a friend of the family, in a partnership to manufacture improved road machinery, at Kennett Square, Penna., and continued in the road-making machines until 1896, then Mr. Pennock determined to devote himself to horticulture, if he could find a suitable opening. In November he went to Jamaica, where he remained for eight months, growing and shipping vegetables to the United States. While there he had unusually good opportunities for studying the management of tropical crops, and he became firmly convinced of the splendid future which awaits the intelligent cultivator in the American tropics.



F. M. PENNOCK

In 1899, after the Spanish-American War had made Porto Rico American territory, Mr. Pennock was employed by Gen. Roy Stone and some of his friends, to make some experiments in vegetable growing at Guayama, P. R., for export to the North. These were so far successful that in June, 1901, The American Fruit Co. was organized to cultivate oranges, pine-apples and winter vegetables, and Mr. Pennock was put in charge of the work. This enterprise shared the ill success of Gen. Stone's railroad plans; the failure being due to the same cause, the lack of sufficient cash capital when the work was initiated.

During the fall of 1900, he presented to the new Commissioner of Education, Prof. M. G. Brumbaugh, the importance of introducing industral education, especially practical instruction in Agriculture into the public schools of Porto Rico. Nineteen rural agricultural schools were provided for during Mr. Brumbaugh's term, Mr. Pennock furnishing the list of the necessary outfits of tools. These schools were just getting started, under extremely difficult conditions, when Dr. S. M. Lindsay succeeded Dr. Brumbaugh.

In April 1902, the new Commissinioner appointed Mr. Pennock to make a report on the condition, needs and prospects of these schools. At the beginning of the same fiscal year he was appointed teacher in the Insular Normal School at Rio Piedras.

During the summer of 1902, Mr. Pennock conducted a short course for the teachers of the rural agricultural schools at the Insular Normal School, which closed with a two day agricultural institute. During the same fiscal year he taught School Gardening and Nature Study in the Normal School and had charge of the grounds. The next school year he taught Botany in addition to his former work, and in 1904, he was appointed Director of the newly created Department of Agriculture in the University of Porto Rico. That same year he married Emma C. Brill, a graduate of Vassar, and a former teacher of the San Juan High School.

The University of Porto Rico, which was organized in 1903, took over the Normal School which was made its first department. It is as yet a university in embryo rather than in fact.

Mr. Pennock's work in the new

department has been director of a farm of 130 acres and principal of an agricultural school for the training of foremen and superintendents of farms.

The school has made gratifying progress during the past two years. The income of the farm increased from $275.25 in the fiscal year of 1904–1905, to $1,396.22 in the fiscal year of 1905–1906, and from $384.36 for the first six months of the last fiscal year, to $1,067.98 for the first six months of the present fiscal year. The principal industries are pineapple growing and a milk dairy.

The students do the greater part of the work of the farm with interest and skill, that increases as they catch the spirit of practical self-helpfulness, which animates the school. Several of the students who have found it necessary to leave the school have secured good positions in agricultural and horticultural lines.

Mr. Pennock is endeavoring to obtain an appropiation from the Insular Legislature for the establishment of an Agricultural Trade School in which blacksmiths, carpenters, wheelwrights, harness makers and painters shall be thoroughly trained.

'80, B. S. in Agr.—William A. Henry's resignation is announced as Dean of the College of Agriculture at the University of Wisconsin. Professor Henry will remain as Professor Emeritus of Agriculture. He has been connected with the Wisconsin Agricultural College for twenty-seven years.

'84, Sp.—George M. Carpenter has recently been appointed the head of the Farmers' Dairy Co., of Wilkesbarre, Pa. The firm are the owners of fifty thoroughbred cattle. Mr. Carpenter has other extensive business interests in Wilkesbarre.

'91, B. S. A.—Jared Van Wagenen, Jr., has been teaching in the short course in the New Jersey Agricultural College at Rutgers, N. J.

'95, B. S. A.—John M. Trueman has left the University of Illinois as Instructor in Dairying for a full professorship in dairying at Connecticut Agricultural College at Storrs. Mr. Trueman has had particular success in teaching and in practical work.

'96, W.—J. H. Stone of Marcellus was in attendance at the Experimenters' League and the Agricultural Banquet. Mr. Stone is the owner of an extensive horse breeding establishment at that place.

'98, W.—Harry T. Fields attended the Experimenters' League. Mr. Fields has been furnishing his neighbors a good example of profitable farming. His receipts from early spring lambs are always at the top of the market. His home is in Oneida.

'02, W.—Garfield S. Parnell who was the Agricultural Expert to the Boys' Industral School at Redington, N. J., has given up his position to go on his home farm at Churchville.

'04, Sp.—D. E. Carley was in attendance at the League and Banquet meetings. He is the proprietor of White Spring Farm at Lisle, N. Y. Mr. Carley makes a speciality of Holstein-Friesian cattle, S. C. White Leghorns and Pekin Ducks. He has also done some good judging of cattle, sheep and swine.

'05, M. S. A.—Modesto Quiroga has entirely recovered from a serious illness. He has recently been appointed as Inspector of Agricultural Schools in the Argentine Republic. His former position was Professor of Agronomy in the National University of Argentina. His headquarters will be Buenos Ayres.

'05, B. S. A.—Chas. F. Shaw's appointment at the Penn. State College is as Instructor in Agronomy, having been given a furlough of three months from the Bureau of Soils, at Washington. After the expiration of the furlough, Mr. Shaw will be in charge of the Soil Survey of Chester Co., where the college is located.

'06, B. S. A.—Lupercio Fagundes has been appointed Vice Director of the Sub Experiment Station for Rice Investigation at Moreira Cezar, Sao Paulo, Brazil. Mr. Fagundes says he secured the position solely because of the training he received while at Cornell.

CONTENTS

MAY, 1907

	PAGE
Cover Design "Spring"	
Table of Contents "The Florence Crabapple"	
Frontispiece "Spring Plowing"	233
The Study of Plant Breeding *by H. J. Webber*	235
Selection a Factor in Plant Breeding *by O. G. Bishop*	241
Memories of May *by P. B. Fletcher, G.*	242
The Summons *by L. H. Bailey*	244
Nature Study and School Gardens *by John Craig*	246
The Value of Nature Study and Children's Gardens *by G. W. Carver*	249
The Peony of To-day *by J. Eliot Coit, G.*	251
Etherizing White Roman Hyacinths *by J. Taubenhaus, '08*	254
A Select List of Technical Books for Agricultural College Instruction *by Thomas F. Hunt*	258
The Worker, A Walking Summer School of Agriculture (continued) *by H. S. Ogden, '06*	263
Making Good on the Farm---II. *by L. A. Ripley, W. '06*	267
Agriculture of Other Nations---V. Poland *by B. M. Kleniewski, '07*	270
A Land-Sea Rotation *by H. H. Schutz, '07*	272
The Farmers' Reading Course *by R. J. Shepard, '10*	273
Editorial	
Yellow Agriculturism	274
Environment	275
Fresh Air	275
General Agricultural News	276
Campus Notes	277
Former Students	279

THE CORNELL COUNTRYMAN

is a monthly magazine published by the students of
The New York State College of Agriculture at Cornell University
ADDRESS, MORRILL HALL, ITHACA, N. Y.

Entered as second-class matter at the Postoffice at Ithaca, N. Y.

COPYRIGHT 1907 BY THE CORNELL COUNTRYMAN

MORRISON

THE TAILOR

In writing advertisers please mention THE CORNELL COUNTRYMAN